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The Dimensional Arrow: Agreement in Directional Mapping of Dimensions  
Among Mandarin Chinese- and English-Speakers

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Abstract

We present evidence that English- and Mandarin-speakers agree about how to map dimensions (e.g., size and clarity) to vertical space, and that they do so in a directional way. We first developed visual stimuli for four dimensions – size, clarity, complexity, and darkness – and in each case we varied the stimuli to express a range of the dimension (e.g., there were five total items expressing the range covering big, medium, and small). In our study, English- and Mandarin-speakers mapped these stimuli to an unlabeled vertical scale. Most people mapped dimensional endpoints in similar ways; using size as a standard, we found that the majority of participants mapped the clearest, most complex, and darkest items to the same end of the vertical scale as they mapped the biggest items. This indicates that all four dimensions have a weighted or unmarked end (i.e., all are directional or polar). The strong similarities in polarity across language groups contrasted with group differences on a lexical task, for which there was little cross-linguistic agreement about which comparative words to use to describe stimulus pairs (e.g., “bigger” vs. “smaller”). Thus, we found no evidence in this study that the perception of these dimensions is influenced by language.

Key words : Dimensions; Language influence; Cross-linguistic; Polarity;  
Cross-modal